

DIGITAL FILTER AND ITS DESIGNING METHOD

Abstract

A method for designing a digital filter for outputting a signal that is the sum of the products of multiplication of the signals at the taps of delay units (11–16) by the filter factors given by factor units (21–25), several times of the signals, wherein various filters from a low-pass filter to a high-pass filter can be designed by using, as the filter factors, the terms of a symmetrical sequence, e.g., $\{-1, 0, 9, 16, 9, 0, -1\}$ in which the sum of all the terms is not zero, and the sum of every other terms is equal to the sum of the other every other terms and has the same sign of that of the other every other terms and by simply changing the signs of the terms of the sequence. By applying a combination of cascade connection of filters, conversion of clock rate, and transfer of filter factors, a digital filter having desired frequency characteristics can be extremely simply designed.